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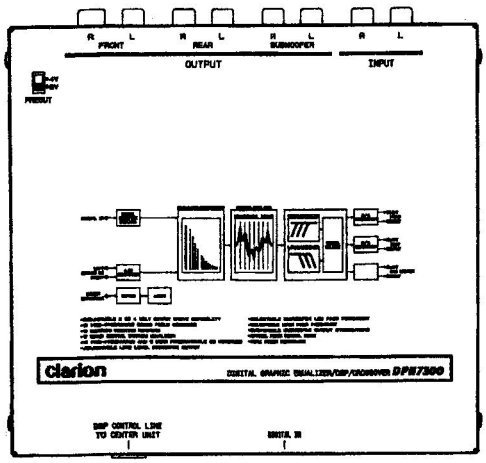
Service Manual



Digital Graphic Equalizer / DSP / Crossover

Model *DPH7300*

(GP-956B:For North America)
(GP-956E:For Europe)

■SPECIFICATIONS

S/N ratio:	107dB(digital input)
	94dB(analog input)
Frequency response:	10Hz to 20kHz(±1dB)
Separation:	94dB(digital input)
	90dB(analog input)
Harmonic distortion:	0.005%(digital input)
	0.007%(analog input)
Voltage gain:	2.5dB(Volume max;2V pre-out)
	8.5dB(Volume max;4V pre-out)
Analog input:	1.5Vrms(Max.)
Digital input:	44.1kHz sampling frequency,16-bit digital audio data
A/D conversion:	16-bit linear,64 times oversampling
D/A conversion:	1-bit linear,8 times oversampling
DSP:	Basic:6modes
	User: 6modes
Graphic equalizer:	7bands
	Basic:6modes
	User: 6modes
Subwoofer:	Voltage gain:+12dB(woofer volume max.)
	LPF Fc:50Hz,80Hz,120Hz
	LPF slope:18dB/oct.
Front/Rear:	HPF Fc:Thru,50Hz,80Hz,120Hz
	HPF slope:12dB/oct.
Power supply voltage:	DC14.4V(10.8V to 15.6V),negative ground
Power consumption:	360mA
Dimensions(mm):	178(W) × 25(H) × 165(D)
Weight:	0.75kg

※ Specification and design are subject to change without notice for further improvement.

■FEATURES

1. Selectable 2 or 4 volt output drive capability
2. 6 pre-programmed sound field memories
3. 5 seating position memories
4. 7 band digital graphic equalizer
5. 6 pre-programmed / 6 programmable equalizer memories
6. Adjustable line level subwoofer output
7. Selectable subwoofer digital low pass filter
8. Selectable digital high pass filter
9. Switchable subwoofer output(Stereo/Mono)

■COMPONENTS

GP-956B-51/GP-956E-51

Main unit	————	1
RCA pin cord	855-8500-00	3
Parts bag	————	1
Mounting bracket	300-7362-00	2
Lead holder	335-0833-01	3
Canoe clip	335-2515-00	4
Clip	335-3744-00	1
machine screw	714-4008-80	4

■ To engineers in charge of repair or inspection of our products.

Before repair or inspection,make sure to follow the instructions so that customers and Engineers in charge of repair or inspection can avoid suffering any risk or injury.

1. Use specified parts.
   The system uses parts with special safety features against fire and voltage.Use only parts with equivalent characteristics when replacing them.
   The use of unspecified parts shall be regarded as remodeling for which we shall not be liable.The onus of product liability (PL) shall not be our responsibility in cases where an accident or failure is as a result of unspecified parts being used.
2. Place the parts and wiring back in their original positions after replacement or re-wiring.
   For proper circuit construction,use of insulation tubes,bonding,gaps to PWB,etc,is involved.The wiring connection and routing to the PWB are specially planned using clamps to keep away from heated and high voltage parts.Ensure that they are placed back in their original positions after repair or inspection.
   If extended damage is caused due to negligence during repair,the legal responsibility shall be with the repairing company.
3. Check for safety after repair.
   Check that the screws,parts and wires are put back securely in their original position after repair.Ensure for safety reasons there is no possibility of secondary ploblems around the repaired spots.
   If extended damage is caused due to negligence of repair,the legal responsibility shall be with the repairing company.
4. Caution in removal and making wiring connection to the parts for the automobile.
   Disconnect the battery terminal after turning the ignition key off.If wrong wiring connections are made with the battery connected, a short circuit and/or fire may occur.If extensive damage is caused due to negligence of repair,the legal responsibility shall be with the repairing company.
5. Cautions regarding chips.
   Do not reuse removed chips even when no abnormality is observed in their appearance.Always replace them with new ones.(The chip parts include resistors,capacitors,diodes,transistors,etc).The negative pole of tantalum capacitors is highly susceptible to heat,so use special care when replacing them and check the operation afterwards.
6. Cautions in handling flexible PWB
   Before working with a soldering iron,make sure that the iron tip temperature is around 270℃.Take care not to apply the iron tip repeatedly(more than three times)to the same patterns.Also take care not to apply the tip with force.
7. Turn the unit OFF during disassembly and parts replacement.Recheck all work before you apply power to the unit.

■FUNCTION OF THE DPH7300

The DPH7300 used digital signal processing to simulate the surround effect inside the car or to correct or change the frequency response,so that you can create a sound suited to your own tastes.

※Adjustments are all performed on the source unit.
※For operation,refer to the owner's guide of the source unit.

Fine adjustment of the listening position

A natural sound field can be created for any seat in the car.One of five positions can be selected:FULL-SEAT,FRONT-RIGHT,FRONT-LEFT,FRONT,REAR,and POSITION PASS.

Six preset sound fields

six basic sound fields are already stored in the memory.

1 HALL:sound of a large concert hall.
2 CHURCH:sound of a church with a very high ceiling.
3 Stadium:sound of a large stadium with no ceiling or walls.
4 LIVE HOUSE:sound of a live performance hall,somewhat larger than a jazz club.
5 DISCO:sound of a disco with strong bass.
6 JZAA CLUB:sound of a jazz club with a low ceiling.

Adjustment of preset sound fields("DSP EDIT")

The percentage of the reflected sound("EFFCT LEVEL")can be adjusted between 0 and 100%.The preset sound fields are all set for an effect level of 50%.

Six equalizer settings

You can select the best equalizer setting for a certain type of music from among six equalizer settings.The values stored in the memory for the different equalizer settings are shown on the table Fig.1.

Graphic equalizer adjustments

The frequency level and minimum frequency can be changed to create the desired sound.Also,six different graphic equalizer settings adjusted by the user can be stored in the memory.

Frequency level adjustment

The frequency level can be adjusted in steps of 1dB between -12dB and +12dB for all frequencies.

Minimum frequency switching

The minimum frequency for adjustment can be switched between 30Hz and 50Hz.

Switching the pre-output voltage

The pre-output voltage can be switched between 2V and 4V to suit the connected amplifier type.(Factory setting is 2V).

Set 2V for a built-in amplifier in the source unit or an amplifier which cannot be used with 4V output.

Set 4V for an amplifier which can be used with 4V output.

Subwoofer adjustments

The following adjustments can be made when a

subwoofer is connected:

1.The speaker setting can be switched between "OFF","MONO"and "STEREO".

2.The subwoofer's volume can be set.(0 to 14;initial setting -8)

3.The low-pass filter frequency can be set to 50Hz,80Hz or 120Hz.(The slope is set to 18dB/oct.)

Band adjustments

The front and rear output playback band can be adjusted.The high-pass filter can be set to one of four settings:Through,50Hz,80Hz or 120Hz.(The slope is set to 12dB/oct.)

Test-tone output

Test tones(pink noise) can be output from the speakers in the following order to check the speaker connections:FRONT-LEFT→FRONT-RIGHT→REAR-LEFT→REAR-RIGHT→WOOFER-LEFT→WOOFER-RIGHT→ALL→OFF

※ For directions on making the above adjustments,refer to the source unit's operating instructions.

Equalizer setting	Graphic equalizer parameter(dB)							Description
	30/50Hz	100Hz	200Hz	400Hz	1kHz	3kHz	12kHz	
1 BASS BOOST	+5	+6	-4	+2	0	0	0	Low frequencies emphasized.
2 HIGH BOOST	0	0	0	-2	+4	+3	+4	Medium and high frequencies emphasized.
3 ACOUSTICAL	0	+2	+1	+4	+6	+5	+1	Medium frequencies(vocals)emphasized.
4 IMPACT	+4	+4	+3	+1	+3	+5	+5	Low and high frequencies emphasized.
5 SMOOTH	+2	+2	0	-2	-4	-4	-2	Medium and high frequencies reduced.
6 FLAT	0	0	0	0	0	0	0	The original sound.

Fig.1

■EXPLANATION OF IC

■μPD78054GC-096-3B9 052-7012-01 DSP/EQ UNIT Controller

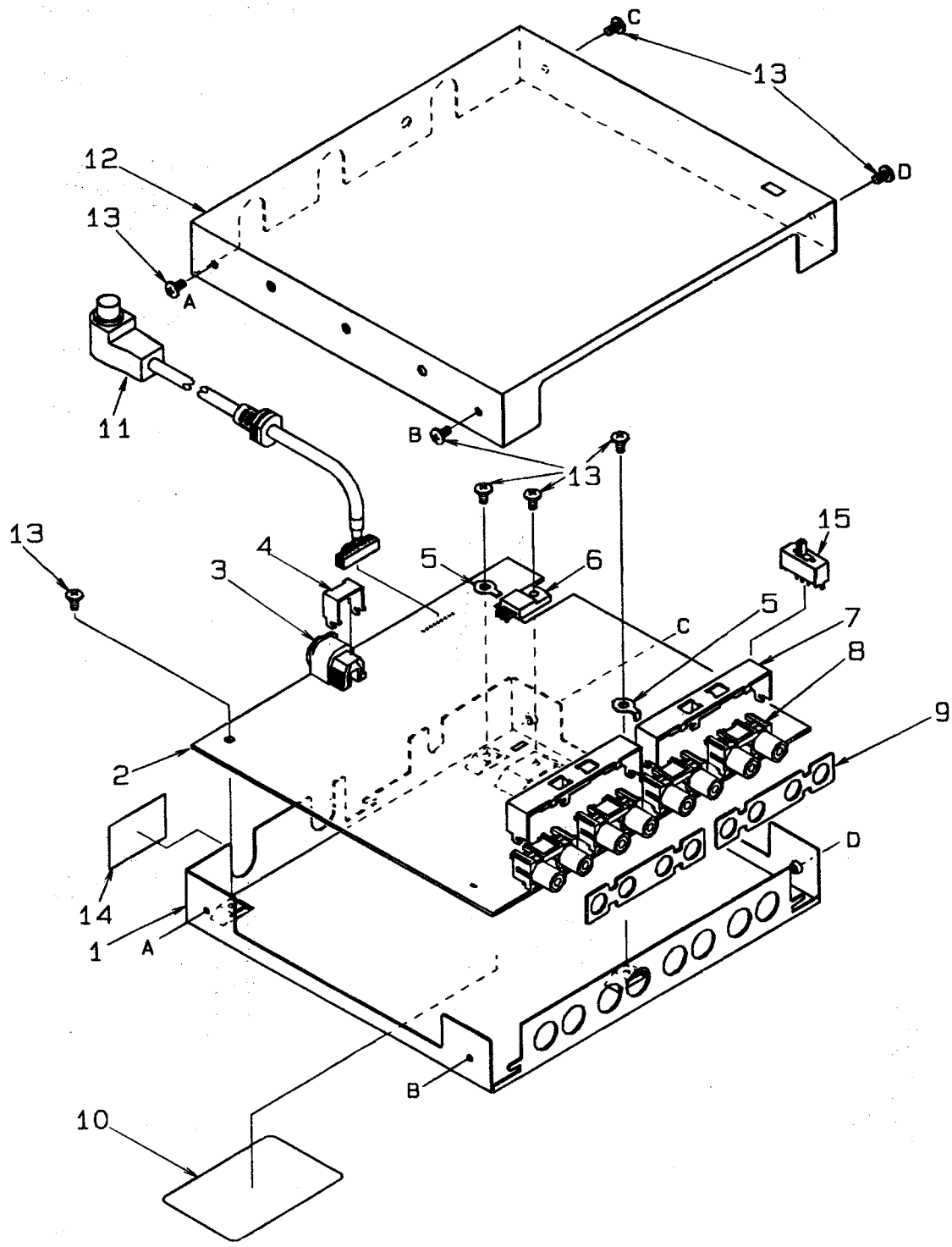
Outward Form

80 pins, plastic QFP

Terminal Description

No.	Symbol	I/O	Function
1	NC	–	Not in use.
2	DE EMP	I	Terminal to detect emphasis bit of digital input signal. The terminal turns "H" when emphasis is present, and "L" when emphasis is absent.
3	AD RES	O	Output terminal to control ADC reset signal.
4	AVSS	–	Connected to GND.
5	NC	–	Not in use.
6	REQ	O	BUS request signal output terminal.
7	AVref 1	–	Power supply voltage terminal (+ 5V).
8	$\overline{RX}$	I	Terminal to receive BUS start stop synchronous communications.
9	$\overline{TX}$	O	Terminal to transmit BUS start stop synchronous communications.
10 11	NC	–	Not in use.
12	SI 1	O	Terminal to transmit data to DSPI.
13	SICK 1	O	Terminal to output clock to DSPI.
14 \ 16	NC	–	Not in use.
17	SIO	O	Terminal to transmit data to DSPO.
18	SICK 0	O	Terminal to output clock to DSPO.
19 \ 22	NC	–	Not In use.
23 24	P10 P00	O	Terminal to control general purpose ports (P0 and P1) of DSPO. It is set before resetting DSP in the normal mode. P0 / P1 / DSP H / H / Unscramble L / H / Scramble It attenuates output in the self-diagnosis mode. P0 / P1 / DSP H / H / 0dB L / H / –6dB H / L / –12dB L / L / 0dB
25	$\overline{D\ RES\ 0}$	O	Terminal to control resetting DSPO.
26	$\overline{SRDY\ 0}$	O	Terminal to output data to DSPO.
27	$\overline{SIAK\ 0}$	I	Terminal to input data from DSPO.
28	$\overline{SIRQ\ 0}$	O	Terminal to output data to DSPO.
29 \ 31	NC	–	Not in use.
32 34	P11 P01	O	Terminal to control general purpose ports (P0 and P1) to DSPI. (Refer to 23/24 pin.)
33	VSS	–	Ground terminal.
35	$\overline{D\ RES\ 1}$	O	Terminal to control resetting DSPI.
36	$\overline{SRDY\ 1}$	O	Terminal to output data to DSPI.
37	$\overline{SIAK\ 1}$	I	Terminal to input data from DSPI.
38	$\overline{SIRQ\ 1}$	O	Terminal to output data to DSPI.
39	NC	–	Not in use.
40	ATT 1	O	Terminal to output control signal for - 10 dB attenuation (analogue).
41	ATT 2	O	Terminal to output control signal for - 6 dB attenuation (analogue).
42 \ 47	NC	–	Not in use.
48	MUTE	O	Output terminal for analogue MUTE control signal.
49	AD SEL	O	Terminal to detect analogue/digital signal input (DIR LOCK) and control validity/invalidity of MUTE control by DIR ERR. Analogue input : Invalid : H Digital input : Valid : L
50	$\overline{DF\ RES}$	O	Terminal to output reset signal to digital filter.
51	TEST 1	I	Switching terminal for the TEST mode. The terminal is turned "H" in the normal mode, and "L" in the TEST mode.
52	NC	–	Not in use.
53	TEST 3	I	Switching terminal for DSP TEST program. H : External type RAM pass mode L : External type RAM access mode
54	TEST 4	I	Terminal to input control pulse for DIGITAL VOLUME UP.
55	TEST 5	I	Terminal to Input control pulse for DIGITAL VOLUME DOWN.
56 \ 59	NC	–	Not in use.
60	$\overline{RESET}$	I	Input terminal to reset microcomputer.
61	GND	–	Ground terminal.
62	DIR LOCK	I	Terminal to detect LOCK of DIR IC.
63	$\overline{+B\ REM}$	I	Terminal to detect POWER ON signal.
64	MUTE INH	O	Terminal to control validity/invalidity of Direct MUTE from head unit. The terminal turns "H" when it is invalid, and "L" when it is valid.
65	$\overline{MUTE\ IN}$	I	Terminal to detect Direct MUTE from head unit. The terminal is turned "H" in the MUTE OFF mode, and "L" in the MUTE ON mode.
66 67	NC	–	Not in use.
68	VDD	–	Power supply voltage terminal (+ 5V).
69 70	X 2 X 1	– I	Connecting terminal for crystal oscillator (4.915MHz).
71	NC	–	Not in use.
72 73	XT 2 XT 1	– I	Connecting terminal for sub system clock oscillator.
74	AVDD	–	Connected to power supply (4 5V).
75	AVREF 0	–	Connected to GND.
76 77	NC	–	Not in use.
78	P ON 1	O	Terminal to output control signal for BUS buffer power supply (+ 5V).
79	P ON 2	O	Terminal to output control signal for DIGITAL IC power supply (+ 5V).
80	NC	–	Not in use.

■EXPLODED VIEW



NO.	PART NO.	DESCRIPTION	Q'TY
1	311-1639-00	LOWER CASE	1
2	039-0864-00	PWB	1
3	075-0305-01	JACK	1
4	331-0278-00	CONNECT HOLDER	1
5	073-0731-01	TERMINAL	2
6	103-1266-00	TRANSISTOR(2SD1266)	1
7	331-0601-00	CONNECT HOLDER	2
8	075-0336-00	JACK	4

NO.	PART NO.	DESCRIPTION	Q'TY
9	347-5143-00	RCA COVER	2
10	286-8705-00 286-8707-00	SETPLATE(GP-956B) SETPLATE(GP-956E)	1 1
11	855-8230-00	MINI-DIN CORD	1
12	310-1570-07	UPPER CASE	1
13	731-2606-80	TAPTIGHT	8
14	347-5144-00	FILM	1
15	013-5005-00	SWITCH	1

■ELECTRICAL PARTS LIST

Note) Several different parts of the same reference number are alternative parts. One of those parts is used in the set.

Main PWB

REF No.	PART No.	DESCRIPTION
C 101	178-1032-78	0.01 μF
C 102	178-3332-78	0.033 μF
C 103	178-4745-79	0.47 μF
C 104	184-1083-31	16V1000 μF
C 105	178-1045-79	0.1 μF
C 106	182-1063-32	16V10 μF
C 107	182-1073-32	16V100 μF
C 108	182-1073-15	6.3V100 μF
C 109	182-1073-32	16V100 μF
C 110	042-0556-00	16V10 μF
C 111	182-2253-62	50V2.2 μF
C 112	042-0557-00	10V100 μF
C 113	182-1063-32	16V10 μF
C 114	042-0522-08	16V10 μF
C 115	042-0557-00	10V100 μF
C 116	178-2232-78	0.022 μF
C 117	182-2263-33	16V22 μF
C 118	178-2232-78	0.022 μF
C 119	178-4745-79	0.47 μF
C 120	178-2242-78	0.22 μF
C 121	182-2263-33	16V22 μF
C 122	178-1022-78	1000pF
C 123	178-1045-79	0.1 μF
C 124	184-2273-22	10V220 μF
C 125	176-2211-00	220pF CH
C 126	182-1073-22	10V100 μF
C 127	178-1045-79	0.1 μF
C 128	178-2232-78	0.022 μF
C 129	182-1063-33	16V10 μF
C 130	178-2232-78	0.022 μF
C 131	182-2263-33	16V22 μF
C 132	178-1045-79	0.1 μF
C 133	178-1045-79	0.1 μF
C 134	178-1045-79	0.1 μF
C 201	043-0264-05	220pF
C 202	043-0264-05	220pF
C 203	043-0264-05	220pF
C 204	043-0264-05	220pF
C 205	042-0555-87	50V1 μF
C 206	042-0555-87	50V1 μF
C 207	042-0555-87	50V1 μF
C 208	042-0555-87	50V1 μF
C 209	182-4763-22	10V47 μF
C 210	042-0558-00	10V47 μF
C 210	178-1045-79	0.1 μF
C 212	043-0264-08	1500pF
C 213	043-0264-08	1500pF
C 214	178-1045-79	0.1 μF
C 215	042-0558-00	10V47 μF
C 216	182-1063-32	16V10 μF
C 217	178-1045-79	0.1 μF
C 218	178-1022-78	1000pF
C 219	178-1045-79	0.1 μF
C 220	176-1007-00	10pF CH
C 221	176-1007-00	10pF CH
C 222	176-1011-00	100pF CH
C 401	178-1045-79	0.1 μF
C 402	176-1007-00	10pF CH
C 403	176-1007-00	10pF CH
C 404	176-1011-00	100pF CH
C 405	178-1032-78	0.01 μF
C 406	176-6801-00	68pF CH
C 408	178-1022-78	1000pF
C 410	176-1011-00	100pF CH
C 411	182-1053-62	50V1 μF
C 412	182-1063-32	16V10 μF
C 413	178-1045-79	0.1 μF
C 414	176-1007-00	10pF CH
C 415	176-1007-00	10pF CH
C 416	178-1045-79	0.1 μF
C 417	178-3332-78	0.033 μF
C 418	176-1011-00	100pF CH
C 419	178-1045-79	0.1 μF
C 420	176-2201-00	22pF CH
C 501	182-1063-32	16V10 μF
C 502	178-1045-79	0.1 μF
C 503	176-1011-00	100pF CH
C 504	182-1063-32	16V10 μF
C 505	178-1045-79	0.1 μF
C 506	176-1011-00	100pF CH
C 507	176-1011-00	100pF CH
C 508	176-1011-00	100pF CH
C 509	178-1022-78	1000pF
C 510	176-8097-00	8pF CH
C 511	176-8097-00	8pF CH
C 512	176-1201-00	12pF CH
C 513	178-1045-79	0.1 μF
C 514	182-1063-32	16V10 μF
C 515	176-1007-00	10pF CH
C 516	176-3311-00	330pF CH
C 517	176-1007-00	10pF CH
C 518	178-1045-79	0.1 μF
C 519	176-1007-00	10pF CH
C 520	176-1007-00	10pF CH
C 521	176-1201-00	12pF CH
C 522	182-1063-32	16V10 μF
C 523	178-1045-79	0.1 μF
C 524	176-1011-00	100pF CH
C 525	176-1011-00	100pF CH
C 526	176-1011-00	100pF CH
C 527	176-1011-00	100pF CH
C 528	176-1011-00	100pF CH
C 529	178-1022-78	1000pF
C 530	176-1011-00	100pF CH
C 531	176-1011-00	100pF CH
C 532	176-1201-00	12pF CH
C 533	176-1201-00	12pF CH
C 601	176-1011-00	100pF CH
C 602	176-1011-00	100pF CH
C 603	176-1011-00	100pF CH
C 604	176-1011-00	100pF CH
C 605	178-1045-79	0.1 μF
C 606	176-1007-00	10pF CH
C 607	176-1007-00	10pF CH
C 608	182-1063-32	16V10 μF
C 701	176-1007-00	10pF CH
C 702	176-1007-00	10pF CH
C 703	178-1045-79	0.1 μF
C 704	182-1063-32	16V10 μF
C 705	178-1045-79	0.1 μF
C 706	042-0556-00	16V10 μF
C 707	178-1045-79	0.1 μF
C 708	182-1063-32	16V10 μF
C 709	178-1032-78	0.01 μF
C 710	178-1032-78	0.01 μF
C 711	178-1032-78	0.01 μF
C 712	042-0556-00	16V10 μF
C 713	178-1045-79	0.1 μF
C 714	176-1011-00	100pF CH
C 715	178-1045-79	0.1 μF
C 716	182-4763-22	10V47 μF
C 717	178-1045-79	0.1 μF
C 718	176-1011-00	100pF CH
C 719	042-0556-00	16V10 μF
C 720	178-1045-79	0.1 μF
C 721	176-1011-00	100pF CH
C 722	178-1045-79	0.1 μF
C 723	182-4763-22	10V47 μF
C 724	178-1045-79	0.1 μF
C 725	176-1011-00	100pF CH
C 726	182-1063-32	16V10 μF
C 727	178-1045-79	0.1 μF
C 728	176-1011-00	100pF CH
C 729	178-1045-79	0.1 μF
C 730	182-4763-22	10V47 μF
C 731	178-1045-79	0.1 μF
C 732	176-1011-00	100pF CH
C 733	176-1007-00	10pF CH
C 734	176-1007-00	10pF CH
C 735	042-0554-89	50V3.3 μF
C 736	042-0554-89	50V3.3 μF
C 737	042-0554-89	50V3.3 μF
C 738	042-0554-89	50V3.3 μF
C 739	182-1063-32	16V10 μF
C 740	182-1063-33	16V10 μF
C 741	182-1063-33	16V10 μF
C 742	178-2242-78	0.22 μF
C 743	043-0264-10	4700pF
C 744	043-0277-52	0.033 μF
C 745	043-0277-52	0.033 μF
C 746	043-0264-10	4700pF
C 747	043-0264-10	4700pF
C 748	043-0264-10	4700pF
C 749	176-1007-00	10pF CH
C 750	043-0264-10	4700pF
C 751	042-0555-16	16V10 μF
C 752	182-1063-32	16V10 μF
C 753	043-0264-10	4700pF
C 754	042-0555-16	16V10 μF
C 755	043-0264-04	100p F
C 756	042-0555-16	16V10 μF
C 757	182-1063-33	16V10 μF
C 758	043-0264-04	100p F
C 759	042-0555-66	16V10 μF
C 760	043-0264-04	100p F
C 761	042-0555-66	16V10 μF
C 762	182-1063-33	16V10 μF
C 763	043-0264-04	100p F
C 764	042-0555-66	16V10 μF
C 765	176-1007-00	10pF CH
C 766	043-0277-52	0.033 μF
C 767	043-0277-52	0.033 μF
C 768	043-0264-08	1500pF
C 769	043-0264-08	1500pF
C 770	043-0264-08	1500pF
C 771	043-0264-08	1500pF
C 772	042-0555-16	16V10 μF
C 773	042-0555-16	16V10 μF
C 774	042-0555-16	16V10 μF
C 775	042-0555-16	16V10 μF
C 776	042-0555-16	16V10 μF
C 777	042-0555-66	16V10 μF
C 778	043-0264-07	390pF
C 779	043-0264-07	390pF
C 780	043-0264-07	390pF
C 781	043-0264-07	390pF
C 782	043-0264-07	390pF
C 783	043-0264-07	390pF
D 101	001-0377-32	MA4056M
D 102	001-0503-33	HZS6 B2L
D 103	001-0330-00	1SS119
D 104	001-0330-00	1SS119
D 105	001-0377-44	MA4082M
D 106	001-0377-32	MA4056M
D 107	001-0501-00	D1NS4
D 401	001-0516-00	MA111
D 402	001-0516-00	MA111
D 403	001-0516-00	MA111
D 404	001-0516-00	MA111
D 405	001-0516-00	MA111
D 701	001-0516-00	MA111
D 702	001-0516-00	MA111
D 703	001-0516-00	MA111
D 704	001-0516-00	MA111
D 705	001-0516-00	MA111
D 706	001-0516-00	MA111

REF No.	PART No.	DESCRIPTION
D 707	001-0516-00	MA111
D 708	001-0516-00	MA111
D 709	001-0516-00	MA111
D 710	001-0516-00	MA111
D 711	001-0516-00	MA111
D 712	001-0516-00	MA111
D 713	001-0516-00	MA111
D 714	001-0516-00	MA111
D 715	001-0516-00	MA111
D 716	001-0516-00	MA111
D 717	001-0516-00	MA111
D 718	001-0516-00	MA111
FIL 101	060-0264-08	1000pF EMI
FIL 102	060-0264-08	1000pF EMI
FIL 103	060-0264-08	1000pF EMI
FIL 104	060-0264-08	1000pF EMI
FIL 105	060-0264-08	1000pF EMI
FIL 106	060-0264-08	1000pF EMI
FIL 107	060-0264-08	1000pF EMI
FIL 108	060-0264-08	1000pF EMI
IC 101	051-0869-55	NJM2103M
IC 102	051-3605-90	NJM2360AM
IC 201	051-3014-90	NJM2115M
IC 202	051-3014-90	NJM2115M
IC 203	051-6309-18	AK5340B
IC 401	051-6308-00	LC8901Q
IC 402	051-0857-35	MC74HC00AF
IC 501	051-6307-00	LC83020
IC 502	051-9200-18	LC33832ML
IC 503	051-1443-06	TC7WU04F
IC 504	051-6319-00	LC83015JE
IC 601	052-7012-01	μPD78054GC-096-3B9
IC 701	051-6320-08	AK4320
IC 702	051-6320-08	AK4320
IC 703	051-6320-08	AK4320
IC 704	051-3015-90	NJM4580M
IC 705	051-3015-90	NJM4580M
IC 706	051-3015-90	NJM4580M
IC 707	051-3015-90	NJM4580M
IC 708	051-3015-90	NJM4580M
IC 709	051-3015-90	NJM4580M
J 201	075-0336-00	
J 701	075-0336-00	
J 702	075-0336-00	
J 703	075-0336-00	
L 101	010-2230-76	22 μH
L 102	010-2230-73	12 μH
L 103	010-2200-02	270 μH
L 104	010-2230-73	12 μH
L 105	010-2230-76	22 μH
L 201	010-2199-30	33 μH J
L 202	010-2198-05	0.33 μH
L 203	010-2198-05	0.33 μH
L 204	010-2198-05	0.33 μH
L 205	010-2198-05	0.33 μH
L 401	010-2230-30	47 μH
L 402	010-2198-52	3.3 μH
L 403	010-2198-52	3.3 μH
L 404	010-2199-16	2.2 μH J
L 501	010-2198-52	3.3 μH
L 502	010-2199-30	33 μH J
L 503	010-2199-16	2.2 μH J
L 504	010-2198-52	3.3 μH
L 601	010-2199-32	47 μH J
L 701	010-2199-16	2.2 μH J
L 702	010-2199-30	33 μH J
L 703	010-2199-30	33 μH J
P 401	075-0305-01	
Q 101	102-2412-00	2SC2412
Q 102	102-2412-00	2SC2412
Q 103	125-0024-04	MUN2113

REF No.	PART No.	DESCRIPTION
Q 104	101-1240-00	2SB1240
Q 105	125-2031-02	MUN2211
Q 106	100-1015-00	2SA1015
Q 107	125-2031-04	MUN2213
Q 108	102-2412-00	2SC2412
Q 109	102-2412-00	2SC2412
Q 110	103-1266-00	2SD1266
Q 111	103-1858-00	2SD1858
Q 112	125-2031-04	MUN2213
Q 113	103-1858-00	2SD1858
Q 114	103-1858-00	2SD1858
Q 115	125-2031-02	MUN2211
Q 116	102-2412-00	2SC2412
Q 117	102-2412-00	2SC2412
Q 118	103-1858-00	2SD1858
Q 119	125-2031-02	MUN2211
Q 120	125-2031-02	MUN2211
Q 121	125-2031-02	MUN2211
Q 122	125-2031-02	MUN2211
Q 123	125-0002-05	RN2405
Q 124	125-2031-02	MUN2211
Q 125	125-2031-02	MUN2211
Q 126	100-1037-00	2SA1037
Q 401	125-2031-02	MUN2211
Q 402	125-2031-02	MUN2211
Q 701	125-0002-05	RN2405
Q 702	125-2031-02	MUN2211
Q 703	125-0002-05	RN2405
Q 704	125-4001-00	XN1504
Q 705	125-4001-00	XN1504
Q 706	125-4001-00	XN1504
Q 707	125-4001-00	XN1504
Q 708	125-4001-00	XN1504
Q 709	125-4001-00	XN1504
Q 710	125-4001-00	XN1504
Q 711	125-4001-00	XN1504
Q 712	103-1306-00	2SD1306
Q 713	103-1306-00	2SD1306
Q 714	103-1306-00	2SD1306
Q 715	103-1306-00	2SD1306
Q 716	103-1306-00	2SD1306
Q 717	103-1306-00	2SD1306
R 101	117-4731-10	1/10W 47kΩ
R 102	117-1031-10	1/10W 10kΩ
R 103	117-1031-10	1/10W 10kΩ
R 104	117-2231-10	1/10W 22kΩ
R 105	117-1031-10	1/10W 10kΩ
R 106	117-2231-10	1/10W 22kΩ
R 107	117-3621-10	1/10W 3.6kΩ
R 108	117-2431-10	1/10W 24kΩ
R 109	117-2231-10	1/10W 22kΩ
R 110	117-3321-10	1/10W 3.3kΩ
R 111	117-3321-10	1/10W 3.3kΩ
R 112	117-1031-10	1/10W 10kΩ
R 113	117-1031-10	1/10W 10kΩ
R 114	117-1031-10	1/10W 10kΩ
R 115	117-2731-10	1/10W 27kΩ
R 116	117-1021-10	1/10W 1kΩ
R 117	117-5621-10	1/10W 5.6kΩ
R 118	117-1031-10	1/10W 10kΩ
R 119	117-1021-10	1/10W 1kΩ
R 120	117-2231-10	1/10W 22kΩ
R 121	117-2231-10	1/10W 22kΩ
R 122	117-4731-10	1/10W 47kΩ
R 123	117-1531-10	1/10W 15kΩ
R 124	117-1021-10	1/10W 1kΩ
R 125	117-4731-10	1/10W 47kΩ
R 126	117-4711-10	1/10W 470Ω
R 127	117-5621-10	1/10W 5.6kΩ
R 128	117-2731-10	1/10W 27kΩ
R 129	117-1031-10	1/10W 10kΩ
R 130	117-1031-10	1/10W 10kΩ

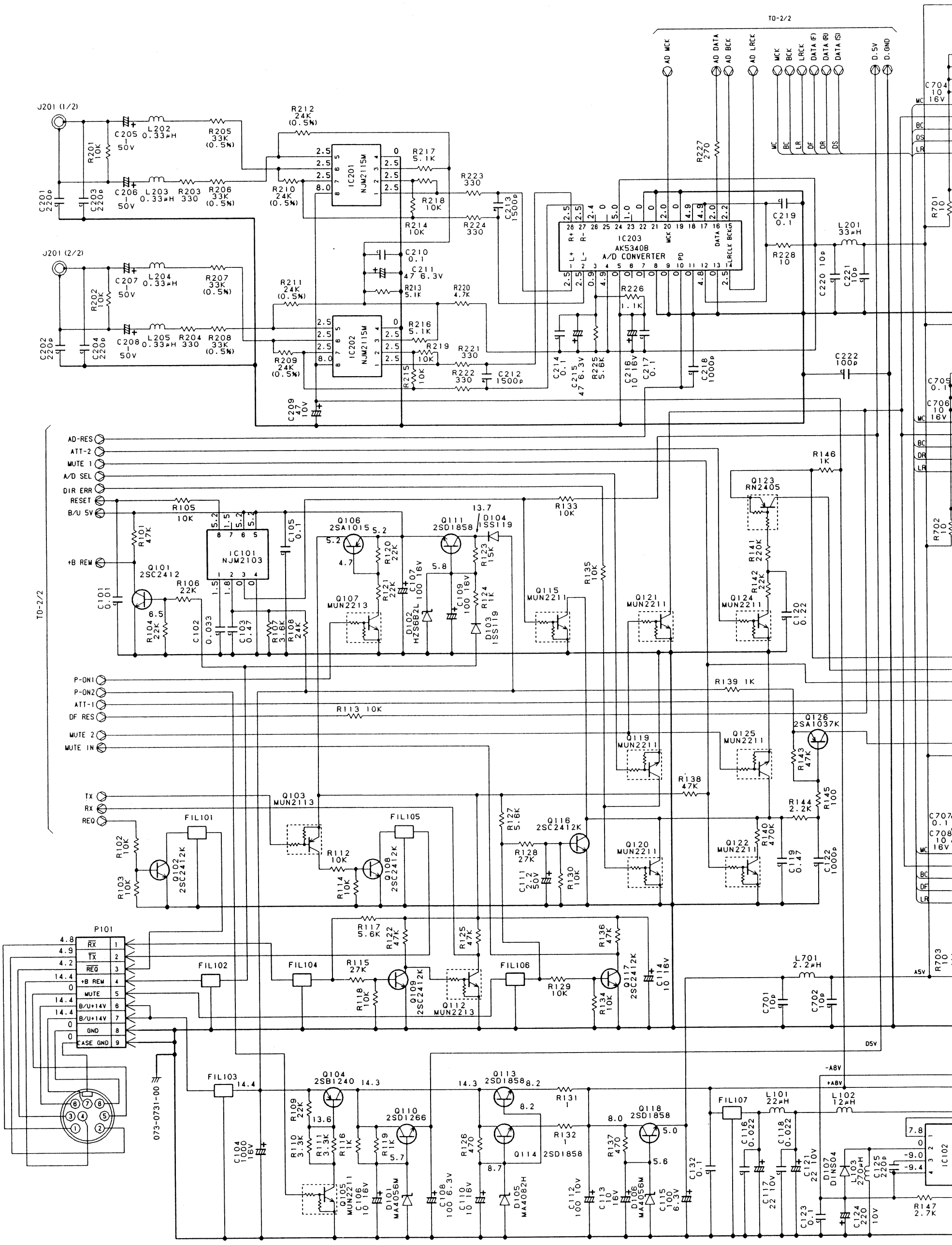
REF No.	PART No.	DESCRIPTION
R 131	111-1091-93	1/4WS 1Ω
R 132	111-1091-93	1/4WS 1Ω
R 133	117-1031-10	1/10W 10kΩ
R 134	117-1031-10	1/10W 10kΩ
R 135	117-1031-10	1/10W 10kΩ
R 136	117-4731-10	1/10W 47kΩ
R 137	117-4711-10	1/10W 470Ω
R 138	117-4731-10	1/10W 47kΩ
R 139	117-1021-10	1/10W 1kΩ
R 140	117-4741-10	1/10W 470kΩ
R 141	117-2241-10	1/10W 220kΩ
R 142	117-2231-10	1/10W 22kΩ
R 143	117-4731-10	1/10W 47kΩ
R 144	117-2221-10	1/10W 2.2kΩ
R 145	117-1011-10	1/10W 100Ω
R 146	117-1021-10	1/10W 1kΩ
R 147	117-2721-10	1/10W 2.7kΩ
R 148	117-1831-10	1/10W 18kΩ
R 149	111-2791-91	1/4WS 2.7Ω
R 150	111-2791-91	1/4WS 2.7Ω
R 201	117-1031-10	1/10W 10kΩ
R 202	117-1031-10	1/10W 10kΩ
R 203	117-3311-10	1/10W 330Ω
R 204	117-3311-10	1/10W 330Ω
R 205	032-0106-20	1/10W 33kΩ
R 206	032-0106-20	1/10W 33kΩ
R 207	032-0106-20	1/10W 33kΩ
R 208	032-0106-20	1/10W 33kΩ
R 209	032-0106-72	1/10W 24kΩ
R 210	032-0106-72	1/10W 24kΩ
R 211	032-0106-72	1/10W 24kΩ
R 212	032-0106-72	1/10W 24kΩ
R 213	117-5121-10	1/10W 5.1kΩ
R 214	117-1031-10	1/10W 10kΩ
R 215	117-1031-10	1/10W 10kΩ
R 216	117-5121-10	1/10W 5.1kΩ
R 217	117-5121-10	1/10W 5.1kΩ
R 218	117-1031-10	1/10W 10kΩ
R 219	117-1031-10	1/10W 10kΩ
R 220	117-4721-10	1/10W 4.7kΩ
R 221	117-3311-10	1/10W 330Ω
R 222	117-3311-10	1/10W 330Ω
R 223	117-3311-10	1/10W 330Ω
R 224	117-3311-10	1/10W 330Ω
R 225	117-5621-10	1/10W 5.6kΩ
R 226	117-1121-10	1/10W 1.1kΩ
R 227	117-2711-10	1/10W 270Ω
R 228	117-1001-10	1/10W 10Ω
R 401	117-2431-10	1/10W 24kΩ
R 402	117-5121-10	1/10W 5.1kΩ
R 403	117-1841-10	1/10W 180kΩ
R 404	117-2041-10	1/10W 200kΩ
R 405	117-8211-10	1/10W 820Ω
R 406	117-2011-10	1/10W 200Ω
R 407	117-4701-10	1/10W 47Ω
R 408	117-5121-10	1/10W 5.1kΩ
R 409	117-1511-10	1/10W 150Ω
R 410	117-8211-10	1/10W 820Ω
R 411	117-4701-10	1/10W 47Ω
R 412	117-3331-10	1/10W 33kΩ
R 413	117-2211-10	1/10W 220Ω
R 414	117-2711-10	1/10W 270Ω
R 415	117-2711-10	1/10W 270Ω
R 416	117-2711-10	1/10W 270Ω
R 417	117-2711-10	1/10W 270Ω
R 418	117-2221-10	1/10W 2.2kΩ
R 419	117-4731-10	1/10W 47kΩ
R 420	117-4731-10	1/10W 47kΩ
R 421	117-1031-10	1/10W 10kΩ
R 422	117-1031-10	1/10W 10kΩ
R 423	117-1031-10	1/10W 10kΩ
R 424	117-3311-10	1/10W 330Ω

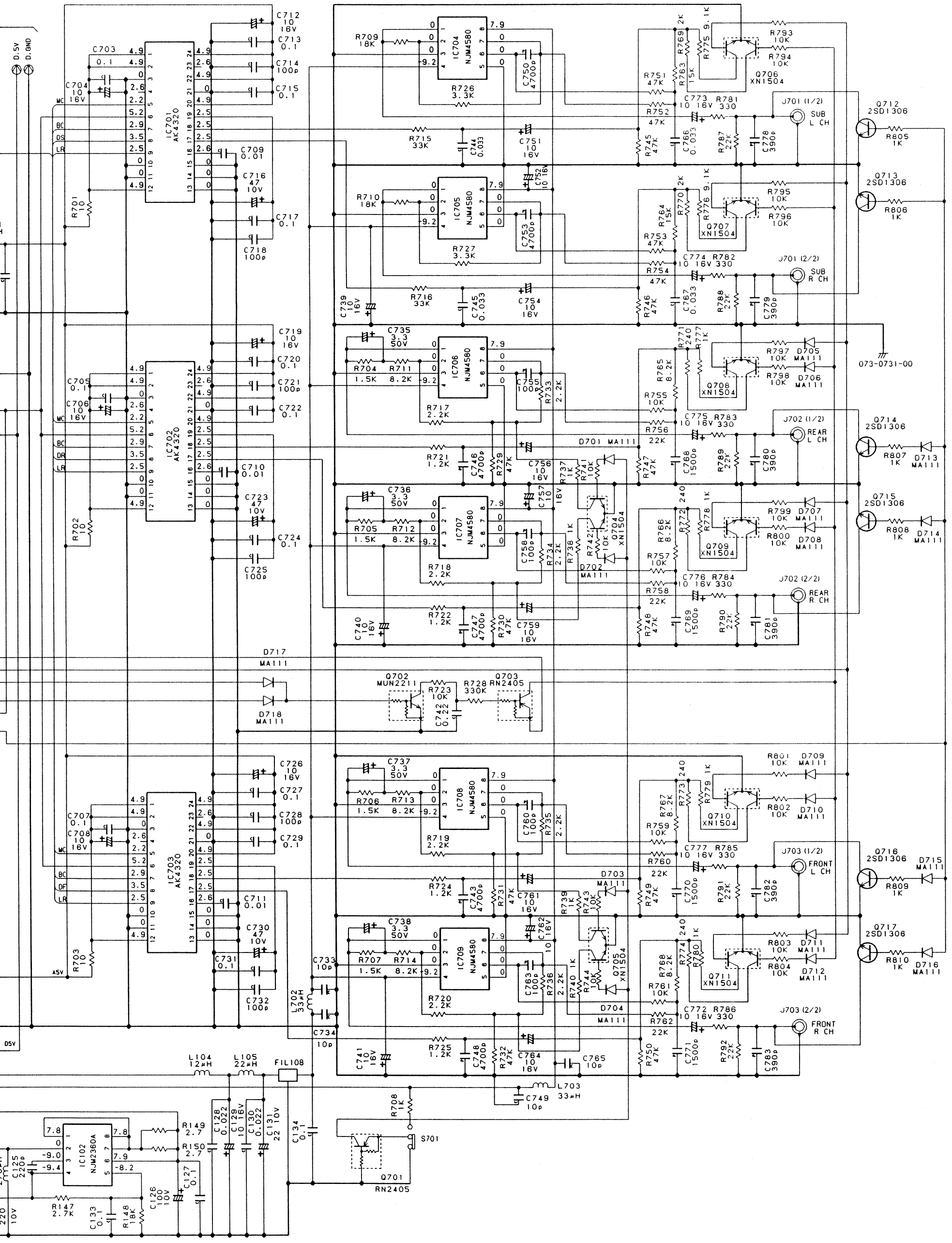
REF No.	PART No.	DESCRIPTION
R 425	117-1011-10	1/10W 100Ω
R 426	117-1001-10	1/10W 10Ω
R 501	117-2711-10	1/10W 270Ω
R 502	117-2711-10	1/10W 270Ω
R 503	117-2711-10	1/10W 270Ω
R 504	117-2711-10	1/10W 270Ω
R 505	117-1051-10	1/10W 1MΩ
R 506	117-2711-10	1/10W 270Ω
R 507	117-2711-10	1/10W 270Ω
R 508	117-2711-10	1/10W 270Ω
R 509	117-2711-10	1/10W 270Ω
R 510	117-2711-10	1/10W 270Ω
R 511	117-2711-10	1/10W 270Ω
R 512	117-2711-10	1/10W 270Ω
R 513	117-4731-10	1/10W 47kΩ
R 514	117-4731-10	1/10W 47kΩ
R 601	117-4731-10	1/10W 47kΩ
R 602	117-4731-10	1/10W 47kΩ
R 603	117-4731-10	1/10W 47kΩ
R 604	117-4731-10	1/10W 47kΩ
R 605	117-4731-10	1/10W 47kΩ
R 606	117-4731-10	1/10W 47kΩ
R 701	117-1001-10	1/10W 10Ω
R 702	117-1001-10	1/10W 10Ω
R 703	117-1001-10	1/10W 10Ω
R 704	117-1521-10	1/10W 1.5kΩ
R 705	117-1521-10	1/10W 1.5kΩ
R 706	117-1521-10	1/10W 1.5kΩ
R 707	117-1521-10	1/10W 1.5kΩ
R 708	117-1021-10	1/10W 1kΩ
R 709	117-1831-10	1/10W 18kΩ
R 710	117-1831-10	1/10W 18kΩ
R 711	117-8221-10	1/10W 8.2kΩ
R 712	117-8221-10	1/10W 8.2kΩ
R 713	117-8221-10	1/10W 8.2kΩ
R 714	117-8221-10	1/10W 8.2kΩ
R 715	117-3331-10	1/10W 33kΩ
R 716	117-3331-10	1/10W 33kΩ
R 717	117-2221-10	1/10W 2.2kΩ
R 718	117-2221-10	1/10W 2.2kΩ
R 719	117-2221-10	1/10W 2.2kΩ
R 720	117-2221-10	1/10W 2.2kΩ
R 721	117-1221-10	1/10W 1.2kΩ
R 722	117-1221-10	1/10W 1.2kΩ
R 723	117-1031-10	1/10W 10kΩ
R 724	117-1221-10	1/10W 1.2kΩ

REF No.	PART No.	DESCRIPTION
R 725	117-1221-10	1/10W 1.2kΩ
R 726	117-3321-10	1/10W 3.3kΩ
R 727	117-3321-10	1/10W 3.3kΩ
R 728	117-3341-10	1/10W 330kΩ
R 729	117-4731-10	1/10W 47kΩ
R 730	117-4731-10	1/10W 47kΩ
R 731	117-4731-10	1/10W 47kΩ
R 732	117-4731-10	1/10W 47kΩ
R 733	117-2221-10	1/10W 2.2kΩ
R 734	117-2221-10	1/10W 2.2kΩ
R 735	117-2221-10	1/10W 2.2kΩ
R 736	117-2221-10	1/10W 2.2kΩ
R 737	117-1021-10	1/10W 1kΩ
R 738	117-1021-10	1/10W 1kΩ
R 739	117-1021-10	1/10W 1kΩ
R 740	117-1021-10	1/10W 1kΩ
R 741	117-1031-10	1/10W 10kΩ
R 742	117-1031-10	1/10W 10kΩ
R 743	117-1031-10	1/10W 10kΩ
R 744	117-1031-10	1/10W 10kΩ
R 745	117-4731-10	1/10W 47kΩ
R 746	117-4731-10	1/10W 47kΩ
R 747	117-4731-10	1/10W 47kΩ
R 748	117-4731-10	1/10W 47kΩ
R 749	117-4731-10	1/10W 47kΩ
R 750	117-4731-10	1/10W 47kΩ
R 751	117-4731-10	1/10W 47kΩ
R 752	117-4731-10	1/10W 47kΩ
R 753	117-4731-10	1/10W 47kΩ
R 754	117-4731-10	1/10W 47kΩ
R 755	117-1031-10	1/10W 10kΩ
R 756	117-2231-10	1/10W 22kΩ
R 757	117-1031-10	1/10W 10kΩ
R 758	117-2231-10	1/10W 22kΩ
R 759	117-1031-10	1/10W 10kΩ
R 760	117-2231-10	1/10W 22kΩ
R 761	117-1031-10	1/10W 10kΩ
R 762	117-2231-10	1/10W 22kΩ
R 763	117-1531-10	1/10W 15kΩ
R 764	117-1531-10	1/10W 15kΩ
R 765	117-8221-10	1/10W 8.2kΩ
R 766	117-8221-10	1/10W 8.2kΩ
R 767	117-8221-10	1/10W 8.2kΩ
R 768	117-8221-10	1/10W 8.2kΩ
R 769	117-2021-10	1/10W 2kΩ
R 770	117-2021-10	1/10W 2kΩ

REF No.	PART No.	DESCRIPTION
R 771	117-2411-10	1/10W 240Ω
R 772	117-2411-10	1/10W 240Ω
R 773	117-2411-10	1/10W 240Ω
R 774	117-2411-10	1/10W 240Ω
R 775	117-9121-10	1/10W 9.1kΩ
R 776	117-9121-10	1/10W 9.1kΩ
R 777	117-1021-10	1/10W 1kΩ
R 778	117-1021-10	1/10W 1kΩ
R 779	117-1021-10	1/10W 1kΩ
R 780	117-1021-10	1/10W 1kΩ
R 781	117-3311-10	1/10W 330Ω
R 782	117-3311-10	1/10W 330Ω
R 783	117-3311-10	1/10W 330Ω
R 784	117-3311-10	1/10W 330Ω
R 785	117-3311-10	1/10W 330Ω
R 786	117-3311-10	1/10W 330Ω
R 787	117-2231-10	1/10W 22kΩ
R 788	117-2231-10	1/10W 22kΩ
R 789	117-2231-10	1/10W 22kΩ
R 790	117-2231-10	1/10W 22kΩ
R 791	117-2231-10	1/10W 22kΩ
R 792	117-2231-10	1/10W 22kΩ
R 793	117-1031-10	1/10W 10kΩ
R 794	117-1031-10	1/10W 10kΩ
R 795	117-1031-10	1/10W 10kΩ
R 796	117-1031-10	1/10W 10kΩ
R 797	117-1031-10	1/10W 10kΩ
R 798	117-1031-10	1/10W 10kΩ
R 799	117-1031-10	1/10W 10kΩ
R 800	117-1031-10	1/10W 10kΩ
R 801	117-1031-10	1/10W 10kΩ
R 802	117-1031-10	1/10W 10kΩ
R 803	117-1031-10	1/10W 10kΩ
R 804	117-1031-10	1/10W 10kΩ
R 805	117-1021-10	1/10W 1kΩ
R 806	117-1021-10	1/10W 1kΩ
R 807	117-1021-10	1/10W 1kΩ
R 808	117-1021-10	1/10W 1kΩ
R 809	117-1021-10	1/10W 1kΩ
R 810	117-1021-10	1/10W 1kΩ
S 701	013-5005-00	
X 401	061-1087-50	16.9344MHz
X 501	061-3034-00	24.576MHz
X 601	060-0319-00	4.915MHz

■CIRCUIT DIAGRAM 1/2




D.5V
D.GND
IC701 AK4320
IC702 AK4320
IC703 AK4320
IC704 NJM4580
IC705 NJM4580
IC706 NJM4580
IC707 NJM4580
IC708 NJM4580
IC709 NJM4580
IC102 NJM2360A
MC
BC
DS
LR
DF
C703 0.1
C704 10 16V
C705 0.1
C706 10 16V
C707 0.1
C708 10 16V
C709 0.01
C710 0.01
C711 0.01
C712 10 16V
C713 0.1
C714 100p
C715 0.1
C716 47 10V
C717 0.1
C718 100p
C719 10 16V
C720 0.1
C721 100p
C722 0.1
C723 47 10V
C724 0.1
C725 100p
C726 10 16V
C727 0.1
C728 100p
C729 0.1
C730 47 10V
C731 0.1
C732 100p
C733 10p
C734 10p
C735 3.3 50V
C736 3.3 50V
C737 3.3 50V
C738 3.3 50V
C739 10 16V
C740 10 16V
C741 10 16V
C742 0.22
C743 4700p
C744 0.033
C745 0.033
C746 4700p
C747 4700p
C748 4700p
C749 10p
C750 4700p
C751 10 16V
C752 10 16V
C753 4700p
C754 10 16V
C755 100p
C756 10 16V
C757 10 16V
C758 100p
C759 10 16V
C760 100p
C761 10 16V
C762 16V
C763 100p
C764 10 16V
C765 10p
C766 0.033
C767 0.033
C768 1500p
C769 1500p
C770 1500p
C771 1500p
C772 R786 10 16V 330
C773 R781 10 16V 330
C774 R782 10 16V 330
C775 R783 10 16V 330
C776 R784 10 16V 330
C777 R785 10 16V 330
C778 390p
C779 390p
C780 390p
C781 390p
C782 390p
C783 390p
R701 10
R702 10
R703 10
R704 1.5K
R705 1.5K
R706 1.5K
R707 1.5K
R708 1K
R709 18K
R710 18K
R711 8.2K
R712 8.2K
R713 8.2K
R714 8.2K
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R716 33K
R717 2.2K
R718 2.2K
R719 2.2K
R720 2.2K
R721 1.2K
R722 1.2K
R723 10K
R724 1.2K
R725 1.2K
R726 3.3K
R727 3.3K
R728 330K
R729 47K
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R761 10K
R762 22K
R763 15K
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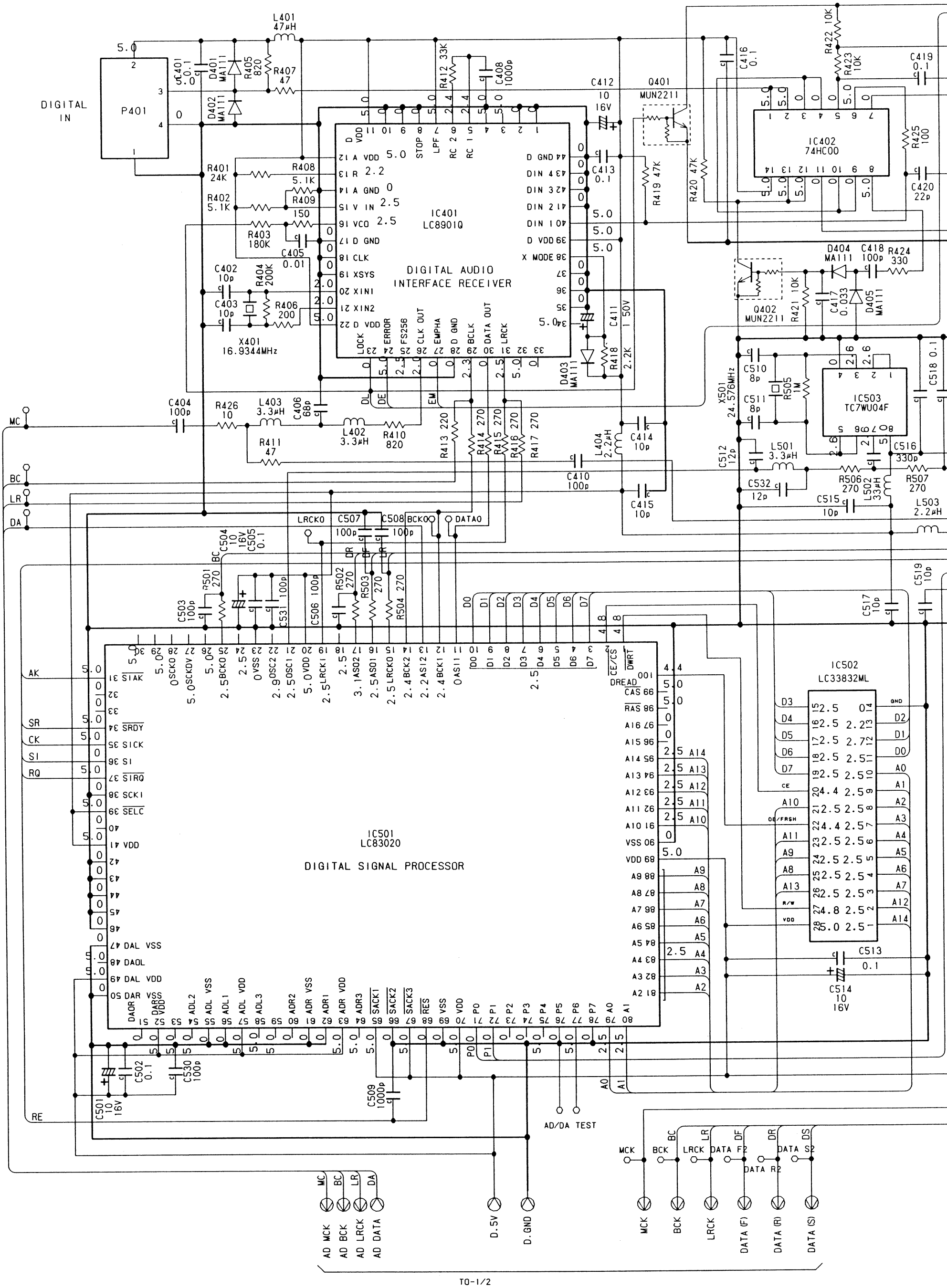
R767 8.2K
R768 8.2K
R769 2K
R770 2K
R771 240
R772 240
R773 240
R774 240
R775 9.1K
R776 9.1K
R777 1K
R778 1K
R779 1K
R780 1K
R787 22K
R788 22K
R789 22K
R790 22K
R791 22K
R792 22K
R793 10K
R794 10K
R795 10K
R796 10K
R797 10K
R798 10K
R799 10K
R800 10K
R801 10K
R802 10K
R803 10K
R804 10K
R805 1K
R806 1K
R807 1K
R808 1K
R809 1K
R810 1K
R147 2.7K
R148 18K
R149 2.7
R150 2.7
Q701 RN2405
Q702 MUN2211
Q703 RN2405
Q704 XN1504
Q705 XN1504
Q706 XN1504
Q707 XN1504
Q708 XN1504
Q709 XN1504
Q710 XN1504
Q711 XN1504
Q712 2SD1306
Q713 2SD1306
Q714 2SD1306
Q715 2SD1306
Q716 2SD1306
Q717 2SD1306
D701 MA111
D702 MA111
D703 MA111
D704 MA111
D705 MA111
D706 MA111
D707 MA111
D708 MA111
D709 MA111
D710 MA111
D711 MA111
D712 MA111
D713 MA111
D714 MA111
D715 MA111
D716 MA111
D717 MA111
D718 MA111
J701 (1/2) SUB L CH
J701 (2/2) SUB R CH
J702 (1/2) REAR L CH
J702 (2/2) REAR R CH
J703 (1/2) FRONT L CH
J703 (2/2) FRONT R CH
073-0731-00
L104 12μH
L105 22μH
L702 33μH
L703 33μH
FIL108
S701
A5V
D5V

■CIRCUIT DIAGRAM 2/2



IC601
UPD78054GC

DSP/EQ UNIT CONTROLLER

IC504
LC83015JE

SURROUND/GRAPHIC-EQ

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